The Flora of the Three Kings Islands.

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The Three Kings Islands form a small group lying about 40 miles to the north-west of Cape Maria van Diemen in the extreme north of New Zealand. They lie roughly in a line running W.S.W. to E.N.E. The largest island, Great Island, consists of two portions connected by a narrow isthmus on either side of which is a bay affording some shelter from westerly weather. This island has an undulating surface surrounded on all sides by high sea cliffs. The highest point is 990 feet above sea level. North East Island is a high, isolated rock which can be ascended in one place by a precipitous track. South West Island, reaching a height of 690 feet, lies to the W.S.W. of Great Island. A landing can be made provided the sea is not too rough. About W.S.W. from this islet is West Island, a high rock with precipitous, apparently unscalable, sides, and on which no one in quest of plants has ever landed. A row of jagged rocks, Princes Islets, lies between South West Island and West Island.

The rocks of the group are mainly greywacke, but andesite is found on some of the islands. The islands may be remnants of an extension of the north-west portion of New Zealand. Whether the present flora is descended from that which covered an area connected with the mainland of New Zealand, or has all arrived by drift, or by both means, is as yet impossible to say; but it is certain that the group has been isolated for a very long time as it contains several endemic species, including an endemic genus.

BOTANICAL COLLECTIONS.

The first botanist to visit the Three Kings Islands was Mr. T. F. Cheeseman, Curator of the Auckland Museum. He landed on Great Island in August, 1887, from the Government steamer *Stella*. Cheeseman, in his account of the group, records 82 species of vascular plants. Apparently he did not collect specimens of all the species but relied largely on entering the names, as he recognised the species, in his notebook. In a few cases doubts have since arisen as to the identity of the species, but no specimens exist in his herbarium to settle them. Of the 82 species observed by Cheeseman during this visit 14 have not since been seen by any subsequent observer. Two years later, in November, 1889, Cheeseman again visited the Three Kings, this time in the Government steamer *Hinemoa*. His report on this trip gives the names of 60 species not mentioned in his first list, and, besides these, he mentions 24 other species. Cheeseman on this occasion landed on South West Island as well as on Great Island. As before, most of the species observed are not represented by specimens in his herbarium, and of the total number of 142 species recorded by Cheeseman, 50 have not subsequently been observed. The question as to whether the disappearance of these species

is due to the goats which from the time of Cheeseman's visits until 1946 were abundant on Great Island is discussed by Baylis and Turbott in this number of the *Records of the Auckland Museum.*

The next person to collect plants on the Three Kings was Mr. W. M. Fraser, Engineer to the Whangarei Harbour Board, who as a member of a party from Government House, stayed on Great Island for three days in December, 1928. The party was conveyed to and from the island by the Government steamer *Tutanekai.* Fraser collected or observed 26 species of which two were additions to the flora. His specimens are preserved in the Dominion Museum. In 1934 an expedition organised by the Auckland Museum visited the group in the auxiliary ketch *Will Watch.* Only two half days were spent ashore on Great Island. An attempt to land on South West Island failed. Botanical collections were made by Dr. Baylis, Mr. Turbott and myself, the specimens going to the Auckland and Dominion Museums. The number of species collected was 62, of which 9 were additions to previous lists. In November-December, 1945, Dr. Baylis was fortunate enough to be able to stay on Great Island for a week. He visited all parts of the island and gathered 83 species of plants for the Auckland Museum. Twelve were additions to previous lists. Baylis brought back four undescribed species (one of which was collected in 1934), including the remarkable discoveries of a species of *Tecomanthe,* which adds a family, Bignoniaceae, to the New Zealand flora, and a tree belonging to the family Anacardiaceae, another family not hitherto known from the New Zealand area.

In 1946 the New Zealand Government despatched a party to Great Island for the purpose of shooting the goats on the island. This they were successful in doing, 398 animals being killed. Mr. E. G. Turbott, of the Auckland Museum, accompanied this expedition and studied the vegetation. He and the four members of the goat killing party, L. C. Bell, M. and B. Chaney, and B. Meachen, collected for the Auckland Museum 62 species of plants, including the four new ones found by Dr. Baylis. Two of the species collected were new records for the island. Mr. Turbott marked out quadrats and carefully recorded their contents so that future botanists might watch the progress of the growth of the vegetation since the goats were exterminated. The last expeditions to the Three Kings were those made by Major M. E. Johnson and Major G. A. Buddle in Major Johnson's yacht in early January of both 1947 and 1948. Dr. Baylis accompanied the 1948 expedition and collected further material on Great Island. Landings were made on North East Island, South West Island, and the Princes Islets. Buddle collected or noted 26 kinds of plants, of which one was new for the group. His specimens are preserved in the Auckland Museum.

GEOGRAPHICAL RELATIONSHIPS.

From the location of the Three Kings Islands it would naturally be expected that New Zealand species should form the bulk if not the whole o fthe flora. Of the 178 species which I have admitted to the list, 168 are found in New Zealand. Three Kings Islands and New Zealand examples of these species show no differences of importance

except in the case of *Coprosma macrocarpa.* In monographing this genus (1935) I associated with Three Kings examples specimens gathered from several localities in the North Auckland district because I could not detect any difference in the leaves. The fruits of the Three Kings plants are, however, considerably larger than those of any New Zealand mainland specimens so far collected.

Six endemic species of Three Kings plants belong to New Zealand genera and may accordingly be regarded as being evolved from New Zealand species which, at some time in the past, have reached the Three Kings group and there remained isolated. These species show that the period of effective isolation has been considerable, though all the species can be related to existing New Zealand species. The species in this group are: *Paratrophis smithii, Alectryon grandis, Pittosporum fairchildii, Suttonia dentata, Hebe insularis, Brachyglottis arborescens.*

There remain four species belonging to genera not represented on the New Zealand mainland, namely: *Davallia tasmani, Chloris truncata, Plectomirtha baylisiana,* and *Tecomanthe speciosa. Davallia* is a genus of tropical ferns, so that, in view of the facilities which ferns have in their spores for carriage by air, its presence in the Three Kings is not surprising. *Chloris* is a large genus of grasses distributed over the warmer regions of the world. *C. truncata* is widely diffused in Australia. *Plectomirtha* is founded in the present report to accommodate a species of the family Anacardiaceae which I am unable to place in any published genus. Its relatives may be looked for in the New Guinea-Melanesia region. *Tecomanthe* consists of 17 species ranging from the Moluccas to the Three Kings. The Three Kings plant is most closely related to the Queensland species *T. hillii.*

A fair conclusion from the facts would be that, with the exception of four species, the flora of the Three Kings has been derived from New Zealand. Probably many of the species have opportunities for crossing from the mainland to the islands, but in the case of the six endemic species isolation has been sufficiently long to enable the immigrants to develop along their own lines into peculiar species. The possibility of these or other species of New Zealand affinity being remnants of a flora that existed when, if ever, the Three Kings were joined to New Zealand, should be kept in view.

The presenc o fthe genra *Davallia, Chloris, Plectomirtha* and *Tecomanthe* is not explainable by derivation from New Zealand, or by land connection with any other country. In the present state of our knowledge, therefore, it must be assumed that they have been brought to the group accidentally by ocean currents, by storms or by birds, this last agent being extremely problematical. *Davallia* has light spores and could be carried by air currents. *Tecomanthe* is also suitable for air transport, as it has winged eeds. The seeds of *Chloris* might be carried by the ocean current which sets eastward from the Australian coast towards New Zealand. *Plectomirtha* probably has a succulent fruit, as has its relative *Semecarpus.*

The species of introduced plants found in the Three Kings Islands show that ocean currents or wind or both are effective agents in transferring seeds from the mainland of New Zealand. Of the 10 species listed, 5 are grasses and 4 composites, families that seem to be prone to spreading widely by means of water and air currents.

ACKNOWLEDGMENTS.

In writing this paper I wish to record my sincere thanks for the generous assistance I have received from Mr. E. G. Turbott, Dr. G. T. S. Baylis, and Major G. A. Buddle; all of whom have permitted me to see their papers in manuscript form. Miss B. E. G. Molesworth, Botanist in the Auckland Museum, has been particularly helpful in replying to my numerous inquiries regarding the specimens in the Auckland Museum from the Three Kings under her care. For the photographs I have to thank Dr. Baylis, Mr. Turbott, and Mr. B. W. Hall, Photographer in the Dominion Museum.

PTERIDOPHYTA

FAMILY HYMENOPHYLLACEAE.

Mecodium sanguinolentum (Forst. f.) Presl.

Three Kings Is. Cheeseman, 1889 (*Hymenophyllum*).

FAMILY CYATHEACEAE.

Cyathea medullaris Sw.

Great Island. Cheeseman, 1887—"a few tree ferns were noticed." Cheeseman, 1889—"along the edges of the stream were several fern trees." Fraser, 1928—"black tree fern . . . in places on the northern side of Tasman Valley." Baylis, 1945—"A few along the Tasman Stream amongst forest remnants."

FAMILY SCHIZAEACEAE.

Schizaea fistulosa Lab.

Great Island. Baylis, 1945 (AM).

FAMILY POLYPODIACEAE.

Polystichum richardi (Hook.) Sm.

Great Island. Cheeseman, 1887—"plentiful."

Cyclosorus pennigera (Forst. f.) Copel.

Great Island. Oliver, 1934 (DM).

Arthropteris tenella (Forst. f.) J. Sm.

Three Kings Is. Cheeseman, 1889.

Davallia tasmani Field.

Davallia sp., Cheesem., *Trans. N.Z. Inst.*, 20, 148, 1888. *D. tasmani* Field, *Ferns N.Z.*, 75, 1890, Three Kings Is., type specimen in Auckland Museum, No. 419/1; Baker, *Ann. Bot.*, 5, 201, 1890; Cheeseman, *Trans. N.Z. Inst.*, 23, 416, 1891; *Man. N.Z. Fl.*, 955, 1906; *Illustr. N.Z. Fl.*, 2, pl. 237, 1914; *Man. N.Z. Fl.*, Ed. 2, 41, 1925. Great Island. Cheese-

man, 1887—"on some rocky ledges near the top of the cliffs a handsome fern new to New Zealand was collected." Cheeseman, 1889 (AM, DM). Baylis, 1945 (AM). Cheeseman records for his 1889 visit to Great Island: "Wherever the tea tree attains a little higher growth than usual, and consequently affords more shade, the new *Davallia* discovered in my previous visit abounds." South West Island. Cheeseman, 1889—"*Davallia tasmani* was plentiful, attaining a greater size than on the main island of the group." Buddle, 1947 (AM). North East Island. Buddle, 1947 (AM).

Asplenium falcatum (Lam.) Copel.
Three Kings Islands. Cheeseman, 1889.

Asplenium obtusatum Forst. f.
Great Island. Cheeseman, 1887. Oliver, 1934 (DM). Baylis, 1934 (AM). Turbott, 1946 (AM)—on ledge close to sea level at north-west landing.

As usual with this species there are different forms of pinnae. In general the side pinnae are rounded at the tip and the terminal pinna has a pointed apex. In one specimen (Baylis, 1934) the pinnae are all acute, in another of the same collection one leaf has the lower pinnae rounded and the upper ones, including the terminal, acute.

Asplenium lucidum Forst. f.
South West Island. Cheeseman, 1889—"This and *Pteris comans* are the most abundant ferns in the undergrowth."

Asplenium flaccidum Forst. f.
Great Island. Cheeseman, 1887—"plentiful." Baylis, 1945 (AM) —rupestral.

Blechnum norfolkianum (Hew.) C. Chr.
Great Island. Cheeseman, 1887 (*Lomaria acuminata*). Cheeseman, 1889 (AM). Fraser, 1928 (DM) (*B. lanceolatum*). Oliver, 1934 (DM). Baylis, 1945 (AM).

All specimens have the long, pointed, falcate pinnae characteristic of *norfolkianum,* although it must be admitted that the line between *norfolkianum* and *lanceolatum* is rather indefinite.

Blechnum procerum (Forst. f.)
Great Island. Cheeseman, 1887—"plentiful." Oliver, 1934 (DM). Baylis, 1945 (AM)—Fertile pinnae quite irregular, in some the base only, in others the middle section being fertile.

Doodia media R. Br.
Great Island. Cheeseman, 1887—"plentiful." Oliver, 1934 (DM). Baylis, 1934 (AM)—"a common fern beneath kanuka both on hills and gullies." Baylis, 1945 (AM). Turbott, 1946 (AM)—under kanuka, scattered sparsely, reddish and flatter in open.

Pellaea rotundifolia (Forst. f.) Hook.
Three Kings Islands. Cheeseman, 1889.

Cheilanthes sieberi Kze.
Great Island. Baylis, 1947.

Hypolepis tenuifolia (Forst. f.) Bernh.
Three Kings Islands. Cheeseman, 1889. Great Island, Fraser, 1928 (DM).

Adiantum affine Willd.
Great Island. Cheeseman, 1887. Oliver, 1934 (DM). Baylis, 1945 (AM).

Adiantum hispidulum Sw.
Great Island. Cheeseman, 1887. Oliver, 1934 (DM). Baylis, 1934, 1945 (AM).

Pteris tremula R. Br.
Great Island. Cheeseman, 1887—"plentiful." Baylis, 1947.

Pteris comans Forst. f.
Great Island. Cheeseman, 1887—"plentiful." Cheeseman, 1889 (AM). Fraser, 1928 (DM). Oliver, 1934 (DM). Segments comparatively small, none over 30 by 8 mm., all sterile, conspicuously shorter and more blunt than in specimens from the Kermadecs and New Zealand. Baylis, 1934 (AM)—not infrequent in gullies. Baylis, 1945 (AM)—sori continuous except at tip. Turbott, 1946 (AM).

Pteridium esculentum (Forst. f.) Ckne.
Great Island. Cheeseman, 1887—"The vegetation on top of the island is mainly composed of stunted tea tree mixed with flax, common fern (*Pteris aquilina*) and sedges." Baylis, 1945 (AM). North East Island. Buddle, 1947.

Pyrrosia serpens (Forst. f.) Ching.
Great Island. Cheeseman, 1887. Turbott, 1946 (AM)—"8 feet above ground in a kanuka." North East Island. Buddle, 1947 (AM).

Microsorium diversifolium (Willd.) Copel.
Great Island. Cheeseman, 1887 (*Polypodium*)—"plentiful." Oliver, 1934 (DM). Baylis, 1945 (AM).

FAMILY LYCOPODIACEAE.

Lycopodium volubile Forst. f.
Great Island. Cheeseman, 1887.

SPERMOPHYTA

FAMILY GRAMINEAE.

Zoisia matrella (L.) Merril.
Great Island. Baylis, 1945 (AM). There are two growth forms, (a) erect, up to 23 cm. tall; (b) prostrate, matted, stems up to 3 cm. in length. Turbott, 1946 (AM).

Paspalum scrobiculatum L.
Three Kings Islands. Cheeseman, 1889.

Oplismenus undulatifolius Beauv.
Great Island. Cheeseman, 1887 (*Panicum imbecile*). Oliver, 1934 (DM). Baylis, 1934 (AM). Turbott, 1946 (AM). North East Island. Buddle, 1947 (AM).

Microlaena stipoides R. Br.
Great Island. Baylis, 1947.

Echinopogon ovatus (Forst. f.) Beauv.
Great Island. Cheeseman, 1887. Fraser, 1928 (DM). Oliver, 1934 (DM). Baylis, 1934 (AM). Turbott, 1946 (AM).

Deyeuxia filiformis (Forst. f.) Hook.
Three Kings Islands. Cheeseman, 1889 (*Agrostis aemula*). Great Island. Baylis, 1934 (AM). North East Island. Buddle, 1947.

Deyeuxia billardieri (R. Br.) Kunth.
Three Kings Is. Cheeseman, 1889. Great Island. Baylis, 1948.

Deyeuxia crinita (L.) Zotov.
Three Kings Islands. Cheeseman, 1889. Great Island. Baylis, 1934, 1945 (AM). Turbott, 1946 (AM).

Danthonia semiannularis R. Br.
Three Kings Islands. Cheeseman, 1889. Great Island. Oliver, 1934 (DM). Baylis, 1934 (AM).

Chloris truncata R. Br.
Great Island. Baylis, 1948. Not hitherto recorded in the New Zealand region.

Arundo kakao Steud.
Great Island. Cheeseman, 1887 (*A. conspicua*). South West Island. Cheeseman, 1889—"above gannet colony." West Island. Cheeseman, 1889.

Poa anceps Forst. f.
Great Island. Cheeseman, 1887. Baylis, 1945, 1947 (AM).

Poa seticulmis Petrie.
Baylis, 1945 (AM). Turbott, 1946 (AM).

Agropyrum kirkii Zotov.
Great Island. Baylis, 1948.

FAMILY CYPERACEAE.

Cyperus ustulatus A. Rich.
Three Kings Islands. Cheeseman, 1889. Great Island. Fraser, 1928 (DM). This seems to differ from the New Zealand plant only in being larger. The stems are more robust and there are more and larger spikes in each umbel. Stems over 1 m. tall, umbels 16 cm. long, of about 12 spikes. Baylis, 1945 (AM). Turbott and Bell, 1946 (AM). South West Island. Buddle, 1947 (AM).

Eleocharis acuta R. Br.
Great Island. Baylis, 1945 (AM)

Scirpus cernuus Vahl.
Three Kings Islands. Cheeseman, 1889 (*Isolepis riparia*). Great Island. Oliver, 1934 (DM). Baylis, 1945 (AM)—very slender, 12 cm. tall. Turbott and Bell, 1946 (AM).

Scirpus inundatus (R. Br.) Poir.
Great Island. Baylis, 1945 (AM).

Scirpus nodosus Rottb.
Great Island. Cheeseman, 1887. Oliver, 1934 (DM). Baylis, 1945 (AM). Turbott and Bell, 1946 (AM).

Schoenus foliatus (Hook. f.) Blake.
Three Kings Islands. Cheeseman, 1889 (*S. axillaris*). Great Island. Baylis, 1945 (AM).

Cladium rubiginosum (Forst. f.) Druce.
Great Island. Baylis, 1945 (AM).

Cladium teretifolium R. Br.
Great Island. Cheeseman, 1887.

Cladium junceum R. Br.
Great Island. Oliver, 1934 (DM). Baylis, 1945 (AM).

Gahnia gahniaeformis (Gaud.) Heller.
Three Kings Islands. Cheeseman, 1889 (*G. arenaria*).

Uncinia uncinata (L.) Kirk.
Great Island. Cheeseman, 1887 (*U. australis*).

Carex virgata Hook. f.
Great Island. Cheeseman, 1887. Oliver, 1934 (DM). Baylis, 1945 (AM). Turbott, 1946 (AM).

Carex ternaria Forst. f.
Three Kings Islands. Cheeseman, 1889.

Carex testacea Boott.
Great Island. Cheeseman, 1887. Fraser, 1928 (DM). Oliver, 1934 (DM). Turbott, 1946 (AM).

Carex lucida Hook. f.
Great Island. Baylis, 1945 (AM).

Carex solandri Hook. f.
Three Kings Islands. Cheeseman, 1889 (*C. necsiana*).

Carex breviculmis R. Br.
Great Island. Cheeseman, 1887. Oliver, 1934 (DM). Baylis, 1945 (AM).

Carex forsteri Wahl.
Three Kings Islands. Cheeseman, 1889 (AM). In one specimen there are 5 terminal male spikelets. Great Island. Baylis, 1945 (AM). North East Island. Buddle, 1947 (AM).

FAMILY JUNCACEAE.

Juncus vaginatus R. Br.
Great Island. Oliver, 1934 (DM). Baylis, 1945 (AM).

Juncus polyanthemos Buch.
Three Kings Islands. Cheeseman, 1889 (*J. communis*).

Juncus bufonius L.
Three Kings Islands. Cheeseman, 1889.

Luzula campestris DC.
Three Kings Islands. Cheeseman, 1889.

FAMILY LILIACEAE.

Cordyline australis (Forst. f.) Hook. f.
Great Island. Cheeseman, 1887. Fraser, 1928—"Cabbage trees grow to large dimensions, with many branches bearing heads of very large leaves, and flowering profusely, were found near running streams facing the east." (*N.Z. Jour. Sci. Tech.*, 11, 152, 1929). Oliver, 1934 (DM). Baylis, 1945 (AM). Turbott, 1946 (AM)—"Somewhat stunted tree, above western cliffs. White fruit, 18th April." South West Island. Cheeseman, 1889—"above gannet colony, short stemmed. Luxuriant specimens in sheltered places, mixed with *Meryta sinclairii*." North East Island. Cheeseman, 1889—"Cabbage trees were seen," from deck of *Hinemoa*.

Collospermum hastatum (Col.) Skottsb.
Great Island. Baylis, 1945 (AM).

Dianella intermedia Endl.
Great Island. Cheeseman, 1887. Baylis, 1945 (AM).

Phormium tenax Forst.
Great Island. Cheeseman, 1887—"above north landing, patches of flax (*P. tenax*) alternating with tea tree and toetoe. The vegetation on the top of the island is mainly composed of stunted tea tree, mixed with flax (*P. tenax*), fern and sedges." South West Island. Cheeseman, 1889—"above gannet colony." Buddle, 1947 (*Phormium* sp.). West Island. Cheeseman, 1889—"Stunted flax on top of West Island seen from deck of *Hinemoa*." Princes Islets. Buddle, 1947 (*Phormium* sp.).

Phormium colensoi Raoul.
Three Kings Islands. Cheeseman, 1889. Some records under *P. tenax* may refer to this species.

Arthropodium cirrhatum (Forst. f.) R. Br.
Great Island. Cheeseman, 1887. Fraser, 1928 (DM)—"On the cliff at Tasman Falls and overhanging the pool immediately above the falls." Turbott and Bell, 1946—quite common, north and west cliff faces.

FAMILY ORCHIDACEAE.

Thelymitra longifolia Forst.
Great Island. Cheeseman, 1887. Baylis, 1945 (AM).

Microtis unifolia (Forst. f.) Reich.
Great Island. Cheeseman, 1887. Baylis, 1945 (AM).

Acianthus fornicatus R. Br. var. **sinclairii** (Hook. f.) Hatch.
Great Island. Cheeseman, 1887.

Caladenia carnea R. Br., var. **minor** (Hook. f.) Hatch.
Great Island. Baylis, 1945 (AM).

Pterostylis trullifolia Hook. f.
Great Island. Baylis, 1948.

FAMILY PIPERACEAE.

Macropiper excelsum (Forst. f.) Miq. var. **major** Cheesem.
Great Island. Cheeseman, 1887. Cheeseman, 1889 (AM). Turbott and Bell, 1946—"practically inaccessible place down cliff, north coast." South West Island. Cheeseman, 1889—"large leaved form of the kawakawa, so common at the Kermadec Islands, forming undergrowth in forest of *Meryta sinclairii* and *Cordyline australis*." Buddle, 1947 (AM). North East Island. Buddle, 1947.

Peperomia urvilleana A. Rich.
Great Island. Cheeseman, 1887. Baylis, 1945 (AM).

FAMILY MORACEAE.

Paratrophis smithii Cheesem.
Trans. N.Z. Inst., 20, 148, 1888. Great Island, Three Kings Is., type specimen in Auckland Museum; *Man. N.Z. Fl.*, 633, 1906; Ed. 2, 379, 1925. Great Island. Cheeseman, 1887 (AM, DM). Fraser, 1928 (DM).—"in sheltered localities facing eastward." Oliver, 1934 (DM). Turbott, 1934 (AM). Baylis, 1934 (AM). Baylis, 1945 (AM). Turbott and Bell, 1946 (AM). South West Island. Cheeseman, 1889 (AM)—"particularly abundant, especially towards the summit of the island, forming a bush a few feet in height, with flexuous and closely interlaced branches, and presenting a very different appearance from the tall, slender, sparingly branched form seen in the gullies of the Great King." Buddle, 1947 (AM). North East Island. Buddle, 1947 (AM).

The present occurrence of this species on Great Island seems to be about the same as at the time of Fraser's visit. The largest leaf I have measured (Fraser, 1928) is 235 by 115 mm., the next largest (Turbott and Bell, 1946) 221 by 115 mm. The petioles are short, 10 to 15 mm. long, thick and curved.

FAMILY URTICACEAE.

Parietaria debilis Forst. f.
Great Island. Cheeseman, 1887. Baylis, 1945 (AM). Turbott, 1946 (AM)—"probably grown since our arrival: goats much reduced in numbers within a week." North East Island. Buddle, 1947.

FAMILY POLYGONACEAE.

Muehlenbeckia australis (Forst. f.) Meissn.

South West Island. Cheeseman, 1889 (*M. adpressa*).

Muehlenbeckia complexa (A. Cunn.) Meissn.

Great Island. Cheeseman, 1887. Oliver, 1934 (DM). Baylis, 1945 (AM). North East Island. Buddle, 1947. In all the specimens the leaves are obovate, widest above the middle, apex obtuse, mucronate. Largest leaf (Oliver, 1934) 25 by 20, petiole 8 mm. Leaves from Karewa Island, Bay of Plenty, are very similar in shape but much smaller.

FAMILY CHENOPODIACEAE.

Salicornia australis Forst. f.

Great Island. Baylis, 1945 (AM) South West Island. Cheeseman, 1889 (*S. indica*)— "Edges of cliffs on either side of gannet colony."

Rhagodia nutans R. Br.

Great Island. Oliver, 1934 (DM). Baylis, 1945 (AM). Turbott and Bell, 1946 (AM). South West Island. Cheeseman, 1889—"Edges of cliffs on either side of gannet colony." North East Island. Buddle, 1947 (AM). Princes Islets. Buddle, 1947 (AM).

Chenopodium triandrum Forst. f.

Great Island. Baylis, 1947.

FAMILY MIRABILIDACEAE.

I have previously (*Trans. Roy. Soc. N.Z.*, 66, 294, 1936) used this name for the family, as *Nyctago* is a synonym of *Mirabilis*.

Hiemerliodendron brunoniana (Endl.) Skottsb.

Great Island. Cheeseman, 1887—"Above north landing. A few small trees of the rare *Pisonia umbellifera* were noticed." Cheeseman, 1889—"On cliffs. Here and there may be seen small clumps of the *parapara* (*P. brunoniana*). Turbott and Bell, 1946 (AM)—north cliff face. Turbott, 1946 (AM)—from a single tree in third valley to north-east from depot. Turbott and Bell, 1946 (AM)—northern cliff face.

FAMILY AIZOACEAE.

Disphyma australe (A. Cunn.) Black.

Great Island. Cheeseman, 1887 (*Mesembryanthemum*). Baylis, 1945 (AM). South West Island. Cheeseman, 1889—"Edges of cliffs on either side of gannet colony." North East Island. Buddle, 1947. Princes Islets. Buddle, 1947 (AM).

Tetragonia expansa Murr.

Three Kings Islands. Cheeseman, 1889.

Tetragonia trigyna Hook. f.

Three Kings Islands. Cheeseman, 1889. Great Island. Turbott and Bell, 1946 (AM)—northern cliff face. North East Island. Buddle, 1947.

FAMILY CARYOPHYLLACEAE.

Stellaria parviflora Hook. f.
Three Kings Islands. Cheeseman, 1889.

Spergularia marginata Kittel.
Great Island. Cheeseman, 1887 (*S. rubra*)—near shore, north landing. Turbott and Bell, 1946 (AM)—"Ledge close to sea level at north-west landing. Cliff top in clay north-east point of island."

Scleranthus biflorus (Forst.) Hook. f.
Three Kings Islands. Cheeseman, 1889.

FAMILY RANUNCULACEAE.

Clematis indivisa Willd.
Great Island. Cheeseman, 1887. Baylis, 1934 (DM)—"A few plants among patches of trees in gullies." Baylis, 1945 (AM). Turbott, 1946 (AM).

Clematis parviflora A. Cunn.
Great Island. Cheeseman, 1887.

Ranunculus hirtus Forst. f.
Three Kings Islands. Cheeseman, 1889 (*R. plebeius*). Great Island. Oliver, 1934 (DM). Baylis, 1945 (AM)

FAMILY MONIMIACEAE.

Hedycarya arborea Forst.
Great Island. Cheeseman, 1887 (*H. dentata*). Cheeseman, 1889—"plentiful in the valley." Oliver, 1934 (DM). Baylis, 1945 (AM). Turbott and Bell, 1946 (AM)—"South branch, upper Tasman Stream. Tree about 10 to 12 feet." Largest leaf 145 by 76 mm., petiole, 21 mm.

FAMILY LAURACEAE.

Litsaea calicaris (A. Cunn.) Hook. f.
Great Island. Cheeseman, 1887—"a few small trees, in the valley." Fraser, 1928 (DM). Oliver, 1934 (DM)—in forest by Tasman Stream, unripe fruit. Baylis, 1945 (AM). Turbott and Bell, 1946 (AM)—"valley above depot in kanuka. In group of trees, northern cliff face, with large leaved tree." [*Plectomirtha*]

FAMILY CRUCIFERAE.

Cardamine heterophylla (Forst. f.) Schultz.
Great Island. Cheeseman, 1887 (*C. hirsuta*). Baylis, 1934, 1945 (AM).

Lepidium oleraceum Forst. f., var. **frondosum** T. Kirk.
South West Island. Cheeseman, 1889 (AM)—"Here and there patches of Captain Cook's scurvy grass (*L. oleraceum*) were growing vigorously on the highly manured ground" [of the gannet colony]. Princes Islets. Buddle, 1947 (AM). Great Island. Baylis, 1948.

FAMILY DROSERACEAE.

Drosera auriculata Planch.

Three Kings Islands. Cheeseman, 1889.

FAMILY CRASSULACEAE.

Tillaea sieberiana Schultz.

Three Kings Islands. Cheeseman, 1889 (*T. verticillata*). Great Island. Baylis, 1934 (AM).

FAMILY PITTOSPORACEAE.

Pittosporum fairchildii Cheesem.

Trans. N.Z. Inst., 20, 147, 1888, Great Island, Three Kings Islands, type specimen in Auckland Museum; Kirk, *Stud. Fl. N.Z.*, 51, 1899; Cheeseman, *Man. N.Z. Fl.*, 58, 1906; Ed. 2, 493, 1925. Great Island. Cheeseman, 1887 (AM, DM)—above north landing, Cheeseman, 1889—"not uncommon, on the cliffs growing in a much more compact form than in the gullies." Fraser, 1928 (DM)—"Where the slopes are broken with boulders *P. fairchildii* grows abundantly." Branchlets woolly. Upper surface of leaf nearly glabrous, under surface with scant wool all over. This gets rubbed off in older leaves. Edge of leaf with thickened margin. Leaf blade 67 by 34 mm., petiole 7 mm. Turbott, 1934 (AM). Baylis, 1945 (AM). Turbott and Bell, 1946 (AM)—"Seaward slopes south of Crater Head. Green fruits, black seeds, yellow mucus."—E.G.T. North East Island. Buddle, 1947 (AM).

FAMILY ROSACEAE.

Rubus cissoides A. Cunn.

Three Kings Islands. Cheeseman, 1889 (*R. australis*).

Acaena anserinaefolia (Forst.) Druce.

Three Kings Islands. Cheeseman, 1889 (*A. sanguisorbae*).

FAMILY GERANIACEAE.

Geranium dissectum L., var. **glabratum** Hook. f.

Three Kings Islands. Cheeseman, 1889. Great Island. Baylis, 1934 (AM). Turbott, 1946 (AM).

Pelargonium modorum Willd.

Three Kings Islands. Cheeseman, 1889. Great Island. Baylis, 1947.

FAMILY OXALIDACEAE.

Oxalis corniculata L.

Great Island. Cheeseman, 1887. Oliver, 1934 (DM)—small, matted plant, small leaves with ciliate margins. Baylis, 1934, 1945 (AM). Turbott, 1946 (AM)—Cliff face near depot; larger than common form.

FAMILY LINACEAE.

Linum monogynum Forst. f.

Three Kings Islands. Cheeseman, 1889.

FAMILY RUTACEAE.

Melicope ternata Forst.

Great Island. Cheeseman, 1887—"a few small trees in the valley." Cheeseman, 1889—"plentiful in the valley." Fraser, 1928 (DM)—"About the stone heaps and *whare* sites of the old-time inhabitants." Oliver, 1934 (DM). Baylis, 1934 (AM)—fairly common on cliffs. Baylis, 1945 (AM). Turbott, 1934 (AM)—eastern section of island. Turbott and Bell, 1946 (AM)—seaward slopes south of Crater Head. South West Island. Cheeseman, 1889. Buddle, 1947. North East Island. Buddle, 1947 (AM).

FAMILY CALLITRICHACEAE.

Callitriche muelleri Sond.

Great Island. Baylis, 1945 (AM).

FAMILY CORIARIACEAE.

Coriaria arborea Lindsay.

Great Island. Cheeseman, 1887 (*C. ruscifolia*).

FAMILY ANACARDIACEAE.

PLECTOMIRTHA Oliver, n. gen..

Tree.—Leaves alternate, entire. Flowers hermaphrodite, in panicles usually below the terminal leaves but sometimes terminal, bracts minute. Calyx disc-like, with 5 minute points opposite the stamens. Petals 5, deciduous. Stamens 5, alternating with the petals, filaments folded in the unopened flower. Ovary one-celled, ovule single, suspended from the top. Stigmas 3, sessile, united, forming a broad, flat disc.

Type species: *Plectomirtha baylisiana* Oliver, Three Kings Islands.

Arbor. Folia alternata, integra. Flores hermaphroditi, paniculati, plerumque infra folia terminales, nonnumquam terminales. Calyx disciformis, depressus. Petalae 5, deciduae. Stamina 5, petalis alternata, filamentis in floribus non apertis inflectis. Ovarium unicum ab apice loculi descendens. Stigmata 3, sessiles, conjunctae. Fructus ignotus.

Affinis *Semecarpus* sed differt floribus hermaphroditis, filamentis inflectis, stigmatis latis, sessilibus, conjunctis.

The discovery by Dr. G. T. S. Baylis on the Three Kings Islands of the present species adds a new genus to the flora of the New Zealand region; also a new family, for when *Corynocarpus* was made the type of a family, Anacardiaceae disappeared from the New Zealand list. It is now restored as a member of the New Zealand flora.

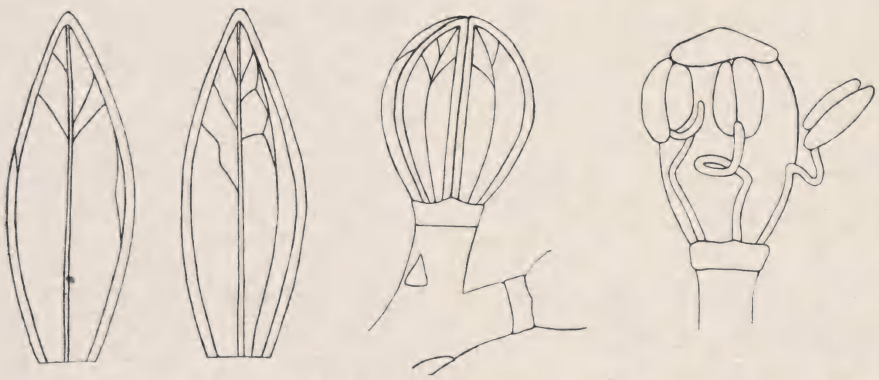
Plectomirtha falls within the family Anacardiaceae but differs in important points from all the other described genera. Apparently it stands next to *Semecarpus*, but differs from that genus in the bisexual

flowers, absence of disc, and especially by the broad, sessile, compound stigma. Its relation to *Semecarpus* rests on the simple leaves, unilocular ovary with single suspended ovule, three styles (sometimes united in *Semecarpus*) and superior pistil. The fruit collected was quite unripe. The long, folded filaments may occur in other genera where the stamens are longer than the petals. Capitate stigmas, less fused than in *Plectomirtha*, are found in some other genera (*Microstemon, Sorinderia*). Bisexual flowers are occasional in the family.

Plectomirtha baylisiana Oliver, n. sp.

Tree with spreading head. Branchlets stout, pale brown, covered with conspicuous lenticels, flattened and expanded where the leaves are inserted. Thickness of branchlets 6-7 mm. or more. The youngest branchlets are much smoother, apparently greenish, and have fewer inconspicuous lenticels.

Leaves alternate, glabrous, mostly in clusters at the ends of stout branchlets. Petiole short, stout; lamina obovate, widest above the middle, base rounded or cuneate, apex rounded or almost truncate; margin entire; midrib strong, 4 or 5 strong lateral nerves on either side arching forward and connecting with the nerve on each side by a submarginal loop; coriaceous. On the under surface n the angles at the junctions of midrib and lateral nerves are domatia lined with white bristles which extend a little way along the nerves. Measurements of leaves: lamina 250 x 156, petiole 30 mm.; lamina 228 x 140, petiole 25 mm.



Text figs. 1-4. *Plectomirtha baylisiana.* 1 and 2 petals, 3 unopened flower, 4 flower with petals removed.

Panicles single and terminal, or more often one or two below the leaves, much shorter than the leaves, about 10 cm. long, with long stalk and much branched head; sparse, minute, appressed hairs on the ultimate branches; bracts small, acuminate, margin bristly. Flowers numerous.

Calyx disc-like, defined below by a groove, upper margin with 5 minute points opposite the stamens. Petals 5, covering the stamens and pistil but apparently falling away soon after the flower opens; lanceolate,

with truncate base; midrib and submarginal nerves with secondary nerves towards the apex. Stamens 5, inserted with the petals and alternating with them. Filaments longer than the petals, bent once or twice in the unopened flower. Anthers large; lobes unequal, dehiscing by longitudinal slits. Ovary single, sessile, ovate. Ovule single, attached at the top. Stigmatic disc large, sessile, consisting of the conjoined three stigmas.

Type specimen in the Auckland Museum, collected by G. T. S. Baylis on Great Island, Three Kings Group, December 2nd, 1945.

Arbor. Folia glabra, obovata, apice rotundata vel truncata, base cuneata, coriacea. Paniculi axillares interdum terminales, foliis brevoir, bracteis minutis, acuminatis, ciliatis. Calyx disciformis, minutissime 5 lobatus. Petalae 5, deciduae, lanceolatae, base truncatae. Stamina 5, petalis alternata, filamentis in floribus non apertis inflectis, antheris inaequilateralibus. Ovarium uniloculare, ovatum. Ovulum unicum, ab apice loculi descendens. Stigmata 3, sessiles, conjunctae, latae, planae.

Baylis, who discovered this species, made the following notes: "A small tree about 15ft. high. Trunk forked at the base, rather slender, smooth, greyish. Crown wide-spreading, rounded, dense. Leaves dark green, extremely glossy, thin and flat in shade, in strong light smaller and curled backward so that adaxial surface is convex. Inflorescences freely produced on the stems below the leaves, rarely terminal. Perianth and stamens caducous. They had fallen from the flowers except those of the single terminal inflorescence collected. Ripe fruit not seen" (Dec. 2, 1945). Further notes on this same tree were made by E. G. Turbott as follows: "One tree 12ft. high. Branches into four trunks, two 6in., two 4in. diam. Where shoots die, new vertical shoots spring up." The leaves of both Baylis' and Turbott's specimens were badly eaten by insects.

Great Island.—"Only one tree found. On a steep scree of large greywacke boulders facing the sea and about 700ft. above it. Associated with pohutukawa, *Leptospermum ericoides, Olea apetala, Melicope ternata*" (Baylis). Baylis, 1945 (AM). Turbott, 1946 (AM).

FAMILY CORYNOCARPACEAE.

Corynocarpus laevigata Forst.

Great Island. Cheeseman, 1889—"On the cliffs. A few *karaka* trees were scattered in sheltered nooks." Fraser, 1928—"About stone heaps and *whare* sites of the old-time inhabitants the *karaka* is found and had probably been brought to the island for food purposes. (*N.Z. Jour. Sci. Tech.*, 11, 152, 1929). Oliver, 1934 (DM). Turbott, 1934 (AM). Baylis, 1934, 1945 (AM). Turbott and Bell, 1946 (AM). Tasman Valley. North East Island. Buddle, 1947.

FAMILY SAPINDACEAE.

Alectryon grandis Cheesem.

Alectryon excelsum, var. *grandis* (name only) Cheeseman, *Trans. N.Z. Inst.*, 23, 418, 1891; Cheeseman, *l.c.* 24, 409, 1892;

Cheeseman, *Man. N.Z. Flora,* 103, 1906. *Alectryon grandis* Cheeseman, *Trans. N.Z. Inst.,* 44, 159, 1912; Cheeseman, *Man. N.Z. Flora,* 552, 1925.

Great Island. Cheeseman, 1889 (AM)—"A small clump growing on the cliffs on the northern side of the Great King." Oliver, 1934 (DM). Baylis, 1934 (AM)—"two trees on cliff above North-west Bay." Baylis, 1945 (AM)—"A single moribund tree on cliffs above landing, North-west Bay." Turbott and Bell, 1946 (AM).

FAMILY ELAEOCARPACEAE.

Aristotelia serrata (Forst.) Oliver.

Three Kings Islands. Cheeseman, 1889.

FAMILY TILIACEAE.

Entelea arborescens R. Br.

Three Kings Islands. Cheeseman, 1889. Great Island. Oliver, 1934 (DM). Baylis, 1934 (AM)—"One miserable goat eaten remnant over tributary to Tasman."

FAMILY VIOLACEAE.

Melicytus ramiflorus Forst.

Great Island. Cheeseman, 1887—"A few small trees, in the valley." Cheeseman, 1889 (AM). Fraser, 1928—"About the stone heaps and *whare* sites of the old-time inhabitants" (*N.Z. Jour. Sci. Tech.,* 11, 152, 1929). Oliver, 1934 (DM)—Three specimens with lanceolate leaves, one with broad elliptic leaves. Turbott, 1934 (AM). Baylis, 1934, 1945 (AM). Turbott, 1946 (AM)—by tributary of Tasman. One specimen with broad leaves with prominent teeth, 104 by 51 mm., petiole 20 mm, others 88 by 45 mm.

Hymenanthera novae-zelandiae (A. Cunn.) Hemsl.

Great Island. Cheeseman, 1887 (*H. latifolia*), north landing. Fraser, 1928 (DM)—"Where the slopes are broken with boulders *H. novae-zelandiae* grows abundantly." Baylis, 1945 (AM). Turbott and Bell, 1946 (AM)—northern cliff face. South West Island. Cheeseman, 1889 (AM)—above gannet colony. Buddle, 1947 (AM). North East Island. Buddle, 1947.

FAMILY PASSIFLORACEAE.

Tetrapathaea tetrandra (DC.) Cheesem.

Great Island. Fraser, 1928 (DM). Compared with New Zealand specimens this has very broad deltoid leaves, with rather blunt tips. Baylis, 1945 (AM). Leaf 98 by 60, petiole 21 mm. Turbott, 1946 (AM).

FAMILY THYMELEACEAE.

Pimelea tomentosa (Forst.) Druce.

Great Island. Cheeseman, 1887 (*P. prostrata*)—"on top of island in shade of tea tree." Cheeseman, 1889 (*P. prostrata* and *P. virgata*).

Fraser, 1928—"Where the slopes are broken with boulders *Pimelea prostrata* grows abundantly." Oliver, 1934 (DM). Baylis, 1945 (AM) —"Habit spreading, sometimes almost prostrate." Turbott, 1946 (AM) —"Close to saddle, eastern section of island. Small shrub, white flowers."

As all the specimens preserved in New Zealand museums belong to *P. tomentosa,* I am uniting all the records under this name. Prostrate examples of *P. tomentosa,* such as those collected by Baylis, could possibly be mistaken for *P. prostrata.*

FAMILY MYRTACEAE.

Leptospermum scoparium Forst.

Great Island. Cheeseman, 1887. Baylis, 1945 (AM). South West Island. Cheeseman, 1889—above gannet colony.

Leptospermum ericoides A. Rich.

Great Island. Cheeseman, 1887. Fraser, 1928 (DM). Fraser states: "The island, particularly the higher portion, is clothed principally with white tea tree, *manuka rauriki* (*L. ericoides*), which, though much distorted by winds, attains a height of about 10 to 20 feet" (*N.Z. Jour. Sci. Tech.,* 11, 152, 1929). Oliver, 1934 (DM). Baylis, 1934, 1945 (AM). Turbott, 1946 (AM). South West Island. Cheeseman, 1889 (AM) (*L. sinclairii*). North East Island. Buddle, 1947. West Island. Buddle, 1947.

Metrosideros excelsa Gaertn.

Great Island. Cheeseman, 1887—"In one or two places near the edge of the cliffs some worn and stunted pohutukawas (*M. tomentosa*) can be found." Cheeseman, 1889—"On the cliffs. Pohutukawas are seen all round the island, but in small numbers, and are dwarfed and stunted compared with their usual size on the mainland." Fraser, 1928. Oliver and Baylis, 1934. Baylis, 1945 (AM). South West Island. Buddle, 1947. North East Island. Cheeseman, 1889. Buddle, 1947. West Island. Buddle, 1947.

Metrosideros robusta A. Cunn.

Three Kings Islands. Cheeseman, 1889.

Metrosideros perforatum (Forst.) Rich.

Great Island. Cheeseman, 1887 (*M. scandens*). Baylis, 1945 (AM).

FAMILY ONAGRACEAE.

Epilobium junceum Forst. f.

Three Kings Islands. Cheeseman, 1889.

Epilobium nummularifolium A. Cunn.

Three Kings Islands. Cheeseman, 1889. Baylis, 1934 (AM).

FAMILY HALORAGIDACEAE.

Haloragis erecta (Murr.) Schind.

Great Island. Cheeseman, 1887 (*H. alata*)—"on top of the island in shade of tea tree." Baylis, 1934, 1947, a few seedlings seen.

Haloragis procumbens Cheesem.

Great Island. Cheeseman, 1887 (*H. depressa*)—"on top of island in shade of tea tree." Cheeseman, 1889 (*H. tetragyna*). Baylis, 1934 (AM)—very rare under *manuka*. Baylis, 1945 (AM). Turbott, 1946 (AM).

In his *Manual of the New Zealand Flora*, 1925, Cheeseman lists from the Three Kings only *H. procumbens*, and as the Auckland Museum specimens belong to this species I conclude that Cheeseman's early records all refer to the same species. *H. procumbens* is doubtfully distinct from *H. incana*, which name precedes *procumbens*.

FAMILY ARALIACEAE.

Pseudopanax lessonii (DC.) Goch.

Great Island. Cheeseman, 1889—"plentiful in the valley."

Meryta sinclairii (Hook. f.) Seem.

Great Island. Turbott and Bell, 1946—only one juvenile plant seen on an inaccessible cliff face. South West Island. Cheeseman, 1889 (AM)—"Nearly the whole of the northern side of the island, where not too steep, was covered with it. . . . The average height of the *puka* was from 10ft. or 15ft. to 20ft., but specimens almost 30ft. in height were noticed. At the time of our visit the female trees were ornamented with large bunches of purplish black berries." Buddle, 1947—"large grove several acres in extent. Trees range to 2ft. 6in. in diameter and up to 30ft. in height." North East Island. Cheeseman, 1889—"The whole of the top is covered with light bush mostly composed of *puka*." Buddle, 1947 (AM)—"grove 3-4 acres in extent on the top of the islet." West Island. Buddle, 1947.

FAMILY UMBELLIFERAE.

Hydrocotyle americana L.

Great Island. Cheeseman, 1887 (*H. heteromera*). Baylis, 1945 (AM).

Hydrocotyle novae-zealandiae DC.

Great Island. Cheeseman, 1887. Baylis, 1934, 1945 (AM). Turbott, 1946 (AM).

Centella asiatica (L.) Urban.

Three Kings Islands. Cheeseman, 1889. Great Island. Oliver, 1934 (DM). Baylis, 1934, 1945 (AM). Turbott, 1946 (AM).

Lilaeopsis novae-zealandiae (Gandog.) Hill.

Great Island. Baylis, 1945 (AM)—Half submerged in Tasman Stream.

Apium prostratum Lab.

Great Island. Cheeseman, 1887 (*A. australe*)—by shore, north landing. Turbott and Bell, 1946 (AM)—top of cliffs, South-east Bay.

Angelica rosaefolia Hook.

Great Island. Cheeseman, 1887—North landing, near shore. Fraser, 1928 (DM)—"Where the slopes are broken with boulders the *kohepiro* grows abundantly." Baylis, 1945 (AM).

Daucus glochidiata (Lab.) Finsch.

Three Kings Islands. Cheeseman, 1889 (*D. brachiatus* Sieb) Great Island, Baylis, 1947.

FAMILY CORNACEAE.

Corokia cotoneaster Raoul.

Great Island. Cheeseman, 1887.

FAMILY ERICACEAE.

Gaultheria antipoda Forst. f.

Three Kings Islands. Cheeseman, 1889.

FAMILY EPACRIDACEAE.

Leucopogon fasciculatus (Forst. f.) A. Rich.

Three Kings Islands. Cheeseman, 1889. Great Island, Baylis, 1947.

Leucopogon fraseri A. Cunn.

Great Island. Cheeseman, 1887—on top of island in shelter of tea tree. Baylis, 1947.

FAMILY MYRSINACEAE.

Suttonia australis A. Rich.

Great Island. Turbott and M. Chaney, 1946 (AM)—Tasman Valley, stream bed. One tree near tree ferns, 12ft.

Suttonia dentata Oliver, n. sp.

A small glabrous tree with stiff widely diverging branchlets covered with dark brown bark, the ends smooth, green. Leaves alternate, elliptic or obovate, bluntly acute or with the tip rounded or even slightly emarginate, sometimes folded at the tip, irregularly dentate along the upper half; coriaceous, rather thick, with thickened margin, reticulated on both surfaces, thickly dotted with pellucid, often reddish, oil glands; petiole short, stout. Average leaf 69 mm. long, 32 broad, petiole 10; shade leaf 93 mm. long, 40 broad, petiole 7. Young leaves with scabrid surface and very short bristles. Flowers in dense clusters on the branchlets between the leaves at a little distance from the ends. Pedicels $2\frac{1}{2}$ mm. long, slender. Calyx deeply 5-fid, lobes narrow. Petals 5, free, elliptic, acute, longer than the stamens, with minute bristles on the margin, studded with oil glands. Stamens 5, opposite the petals. Ovary with capitate stigma. Fruit depressed-globose, flat topped, 5 mm. long, 7 diam.

Type specimen in Auckland Museum, collected by G. T. S. Baylis on Great Island, Three Kings Islands, December 4th, 1945.

Arbor glabra. Folia alterna, elliptica vel obovata, acuta vel obtusa, dentata ad apice, coriacea. Flores fasciculi. Calyx 5-fidus, lobis acutis. Petala 5, libera, elliptica, acuta, marginibus ciliatis. Stamina petalis opposita. Ovarium stigma capitata. Fructus depresso-globosus.

A *S. chathamica* differt ramulis glabris, foliis dentatis acutis, sepalis angustatis.

Baylis describes this species as follows: "A small tree, 10 to 20ft. high. Bark smooth, greyish. Trunk slender. Crown rounded, fairly dense."

S. dentata is related nearest to *S. chathamica*, but differs in its glabrous branchlets, acute, dentate leaves, narrow sepals, elliptic petals, and stamens shorter than the petals.

Great Island. "Three widely separated specimens were found in the Tasman Stream valley. None bore any flowers or fruit. Two more trees, one bearing remains of male flowers, were found on a steep scree on the northern coast about 800 fet above the sea. The foliage is somewhat different from the trees in the valley, but so is the habitat. I located two further trees which appeared to be the same near Hapuka Point but could not reach them" (Baylis). Oliver, Baylis and Turbott, 1934 (AM, DM). Baylis, 1945 (AM). Turbott, 1946 (AM)—rocky slope below Hapuka Point. Turbott, Bell and B. Chaney, 1946 (AM)—northern cliff face.

FAMILY SAPOTACEAE.

Sideroxylon novo-zelandicum (F. Muell.) Hemsl.

Great Island. Turbott, 1934 (AM)—Eastern section of island, scarce. Baylis, 1945 (AM). Turbott and Bell, 1946 (AM).

FAMILY OLEACEAE.

Olea apetala Vahl.

Great Island. Oliver, 1934 (DM)—small leaves, up to 92 by 40 mm. Turbott and Bell, 1946 (AM)—In group of trees, northern cliff face, with large-leafed tree [*Plectomirtha*]; also seaward slopes south of Crater Head.

FAMILY LOGANIACEAE.

Geniostoma ligustrifolium A. Cunn., var. **major** Cheesem.

Great Island. Cheeseman, 1889 (AM)—"An unusually large-leaved variety of the *hangehange* is common." Oliver, 1934 (DM)—leaf, 90 by 49, petiole, 14 mm. Baylis, 1945 (AM). Turbott and Bell, 1946 (AM)—Tasman Valley, by streams.

FAMILY APOCYNACEAE.

Parsonsia heterophylla A. Cunn.

Great Island. Baylis, 1945 (AM). Turbott and Bell, 1946 (AM)—northern cliff face. Leaf, 88 by 57, petiole, 20 mm. South West Island. Cheeseman, 1889 (*P. albiflora*). North East Island. Buddle, 1947.

FAMILY CONVOLVULACEAE.

Ipomoea palmata Forst.
North East Island. Buddle, 1947 (AM)

Calystegia sepium (L.) R. Br.
Great Island. Cheeseman, 1887.

Calystegia tuguriorum (Forst. f.) R. Br.
Great Island. Cheeseman, 1887.

Dichondra repens Forst.
Great Island. Cheeseman, 1887. Oliver, 1934 (DM). Baylis, 1945 (AM). Turbott, 1946 (AM). North East Island. Buddle, 1947.

FAMILY BORAGINACEAE.

Myosotis spathulata Forst. f.
Great Island. Cheeseman, 1887. Cheeseman, 1889 (AM).

FAMILY VERBENACEAE.

Vitex lucens T. Kirk.
Great Island. Baylis, 1945 (AM). Turbott and Bell, 1946 (AM) —valley above depot.

FAMILY SOLANACEAE.

Solanum nigrum L.
Three Kings Islands. Cheeseman, 1889. Great Island. Turbott and Bell, 1946 (AM)—above cliff, South-east Bay. North East Island. Buddle, 1947.

Solanum aviculare Forst. f.
Three Kings Islands. Cheeseman, 1889. Great Island. Baylis, 1947.

FAMILY SCROPHULARIACEAE.

Hebe insularis (Cheesem.) Ckne. & Allan.
Veronica insularis Cheesem. *Trans. N.Z. Inst.*, 29, 392, 1897. Three Kings Is., type specimen in Auckland Museum; *Man. N.Z. Flora*, 510, 1906 *id.* Ed. 2, 797, 1925. *Hebe insularis* (Cheesem.) Ckne. & Allan, *Trans. N.Z. Inst.*, 57, 25, 1927. Great Island. Cheeseman, 1889 (*Veronica sp.*). Fraser, 1928 (DM)—"On the cliff at Tasman Falls and overhanging the pool immediately above the falls was found a pale lavender-blue *koromiko*, a showy and beautiful plant growing to a height of about two feet." Oliver, 1934 (DM). Baylis, 1945 (AM)—"flowers pale blue." South West Island. Cheeseman, 1889 (AM, DM). Buddle, 1947 (AM)—plentiful on the islet.

Cheeseman states that this species is closely allied to *H. elliptica*. The leaves agree closely, but the inflorescenc in *H. insularis* is branched, whereas in *H. elliptica* it is a simple raceme.

FAMILY BIGNONIACEAE.

Tecomanthe speciosa Oliver, n.sp.

A tall woody climber. Leaves imparipinnate, common petiole stout. Terminal leaflet and upper pair adjacent, lower pair near middle of common petiole. Terminal leaflet obovate, base slightly unequal-sided, cuneate, apex rounded, emarginate, unequal-sided; midrib stout, ribbed; lateral veins strong, 6-7 on either side of midrib, reticulation obscure. Upper end lower pairs of leaflets very unequal-sided at base, the outer side being rounded and joining the petiolule near its base, the inner side cuneate, joining the midrib about 10 mm. from the base. Apex slightly emarginate, slightly unequal-sided; venation as in terminal leaflet.

Measurements of leaf:

Common petiole to lower leaflets.	to upper leaflets.	Terminal leaflet.	Petiolule	Upper pair.	Petiolule.	Lower pair.	Petiolule.
94	162	147 x 102	30	135 x 85	2	103 x 75	5
75	137	135 x 87	30	133 x 82	2	98 x 68	2

Inflorescence corymbose, axillary few flowered. "The flowers are well down on the older stems, not on young shoots" (Turbott). Flowers on corymb. Calyx cup-shaped, with 4, sometimes 3 or 5, acute or obtuse lobes. In opened flowers the calyx splits to the base. Outside with a velvety surface. margin thickened and smooth. Length 18-19 mm., Pedicels 10 mm. Corolla gradually widening from base, tube, 37 mm., nearly half as long as flower, 77 mm. "creamy-white, sometimes greenish" (Turbott), buff yellow when dry. Lobes with rounded sides, acute, inner surface smooth, outer densely covered with woolly hairs (2 short petals); on the three longer petals the woolly portion on the back is divided into an outer dense part with concave margin and an inner less dense and differently coloured part. Inside the tube at the point where the stamens become free from it are patches of long jointed hairs. The longer petals are joined far beyond the top of the tube.

Stamens 4, filaments arising at base of corolla tube and joined thereto for about 10-12 mm. Stamens 60-70 mm. long in same flower. Anthers 9 mm. long, lobes diverging. Staminodium filiform, about 25 mm. long, sparingly hairy. Pistil about 60 mm. long, with 2 truncate stigmatic lobes.

Type specimen in Auckland Museum, collected by E. G. Turbott on Great Island, Three Kings Group, May 12th, 1946.

Caulis scandens, ligneus. Folia imparipinnata, paribus duobus. Foliolum terminale obovatum, base inaequilaterale, cuneatum, apice rotundatum, emarginatum, nervo medio costato, robusto, nervis lateralibus robustis, 6-7 utrobique. Foliola laterales base multo inaequilaterales, apice nonnihil emarginates. Inflorescentia corymbosa, axillaris. Calyx cupuliformis, 3-4 lobis, obtusis. Corolla base non contracta, intra pilosa; tubus lobis aequalis; lobi 5, inaequalis, intra glabra, extra lanata. Stamina 4, ad basem corollae conjuncta. Staminodium filiforme, sparce pilosum, pistillum stigma bilobato. Fructus ignotus.

C. hillii affinis sed foliis multo major, late obovatis, corollae tubo non contracto, staminodio longo.

From Dr. Baylis' notes I take the following information: "Liane. A vigorous twiner ascending to the top of a large tree of *Leptospermum ericoides*, i.e., about 25-30 feet. Rooted in swampy soil in the bed of one of the tributaries of the Tasman Stream. Old stems rooting freely where they sprawled across wet ground." Regarding the flowers, Turbott notes: "Creamy-white, sometimes greenish, green sepals. Orange-yellow anthers. Several bunches flowers fully opened; also buds about to open."

A small specimen of this species was forwarded to the Kew Herbarium and a reply was received from the Director enclosing a report from Mr. N. Y. Sandwith containing the following remarks: "Mr. Oliver's material, as would be expected, resembles *Tecomanthe hillii* much more closely than any other species, and is strongly suggestive of it in certain characters. It is probable, however, that it represents a new endemic species." I have not seen a specimen of *Tecomanthe hillii*, but from a description and figure I gather that *T. speciosa* differs in the following characters: the leaflets are obovate instead of ovate-lanceolate and are much larger; the calyx is rather thick, not membranous; the corolla is not rosy-purplish; the staminodium is longer.

Great Island. "In the bed of one of the tributaries of the Tasman Stream about one mile from the sea and 500ft. above sea level. Only one specimen on the island. All suitable habitats are accessible and were examined" (Baylis). Baylis, 1945 (AM). Turbott, 1946 (AM). North East Island. Buddle, 1947, several plants seen on top of islet.

FAMILY MYOPORACEAE.

Myoporum laetum Forst. f.

Great Island. Fraser, 1928 (DM)—"Where the slopes are broken with boulders the *ngaio* grows abundantly." Oliver, 1934 (DM)—Coastal rocks. Some leaves elliptic, long, acute, 118 by 40, petiole, 10 mm.; others short and broad, 97 by 45, petiole, 18 mm. with fine serrations and produced apex. Baylis, 1945 (AM)—prostrate form with short, broad, sharply toothed leaves. Turbott, 1946 (AM). South West Island. Cheeseman, 1889. Buddle, 1947. North East Island. Buddle, 1947.

FAMILY PLANTAGINACEAE.

Plantago raoulii DC.

Great Island. Oliver, 1934 (DM). Baylis, 1945 (AM).

FAMILY RUBIACEAE.

Coprosma rhamnoides A. Cunn.

Great Island. Fraser, 1928 (DM)—"Where the slopes are broken with boulders *C. rhamnoides* grows abundantly." Oliver, 1934 (DM)—undergrowth in *kanuka* forest; densely divaricating shrub. Baylis, 1945 (AM). Turbott, 1946 (AM).

Plectomirtha baylisiana, Great Island. Specimen in Auckland Museum, collected by G. T. S. Baylis, 2nd December, 1945.

Photo, B. W. Hall.

Coprosma robusta Raoul.

Great Island. Cheeseman, 1887.

Coprosma macrocarpa Cheesem.

Coprosma macrocarpa Cheesem. *Trans. N.Z. Inst.*, 20 1471, 1888. Great Island, type specimen in Auckland Museum; *Man. N.Z. Flora*, 246, 1906; *id.* Ed. 2, 858, 1925. Kirk, *Stud. Fl., N.Z.*, 230, 1899. Oliver, *Bull.* 132, *Bish. Mus.*, 112, 1935.

Great Island. Cheeseman, 1887 (AM). Cheeseman, 1889 (AM, DM)—plentiful. Oliver, 1934 (DM)—leaf, 132 by 75, petiole, 20 mm. Baylis, 1934, 1945 (AM)—Leaf, 140 by 66, petiole, 20 mm. (1945). South West Island. Cheeseman, 1889. Buddle, 1947 (AM). North East Island. Buddle, 1947 (AM).

Coprosma australis (A. Rich.) Robinson.

Great Island. Cheeseman, 1887. Fraser, 1928—"In sheltered localities facing eastward."

Coprosma repens A. Rich.

Great Island. Cheeseman, 1887 (*C. baueriana*)—north landing. Fraser, 1928 (DM)—"Where the slopes are broken with boulders the *angiangi* (*C. baueri*) grows abundantly." Baylis, 1945 (AM). Turbott and Bell, 1946 (AM)—By pool above Tasman Falls. Princes Islets. Buddle, 1947 (AM). North East Island. Buddle, 1947.

FAMILY CUCURBITACEAE.

Sicyos angulata L.

Great Island. Cheeseman, 1887—"north landing, near shore. Scrambling among the rocks were large masses of *Sicyos angulatus*." Turbott and Bell, 1946 (AM)—Growing over kanuka, top of cliff. Baylis, 1947. South West Island. Cheeseman, 1889. North East Island. Buddle, 1947.

FAMILY CAMPANULACEAE.

Colensoa physaloides (A. Cunn.) Hook. f.

Great Island. Cheeseman, 1887 (AM)—"Along the margin of the little stream which occupies the bottom of the gully were large masses of the rare *C. physaloides*." Cheeseman, 1889—"In open, sunny places were large masses of *C. physaloides*." Oliver, 1934 (DM). Baylis, 1934 (AM)—"not relished by goats." Baylis, 1945 (AM). Turbott and Bell, 1946 (AM)—Tasman Stream bed. New shoot on old stump left by goats, 4th May.

Lobelia anceps L.

Great Island. Cheeseman, 1887—north landing, near shore. Oliver, 1934 (DM). Baylis, 1945 (AM). Turbott and Bell, 1946 (AM)—South-east Bay, above cliff.

Wahlenbergia gracilis (Forst. f.) Schrad.

Great Island. Cheeseman, 1887. Fraser, 1928 (DM)—on the cliff at Tasman Falls. Baylis, 1945 (AM). Turbott, 1946 (AM). South West Island. Buddle, 1947 (AM). North East Island. Buddle, 1947.

FAMILY COMPOSITAE.

Lagenophora pumila (Forst. f.) Cheesem.

Great Island. Cheeseman, 1887—on top of island in shade of tea tree. Oliver, 1934 (DM). Baylis, 1945 (AM).

Gnaphalium luteoalbum L.

Three Kings Islands. Cheeseman, 1889. Great Island. Baylis, 1945 (AM).

Gnaphalium japonicum Thunb.

Great Island. Cheeseman, 1887 (*G. involucratum*)—on top of island in shade of tea tree.

Gnaphalium collinum Lab.

Great Island. Cheeseman, 1887. Oliver, 1934 (DM). Baylis, 1945 (AM). Turbott, 1946 (AM)—under kanuka.

Siegesbeckia orientalis L.

Great Island. Baylis, 1934, 1947 (AM).

Bidens pilosa L.

Three Kings Islands. Cheeseman, 1889.

Cotula australis (Lieb.) Hook. f.

Great Island. Oliver, 1934 (DM). Baylis, 1945 (AM).

Centipeda orbicularis Lour.

Great Island. Oliver, 1934 (DM). Baylis, 1945 (AM).

Erectites arguta (A. Rich.) DC.

Three Kings Islands. Cheeseman, 1889

Erechtites quadridentata (Lab.) DC.

Three Kings Islands. Cheeseman, 1889.

Brachyglottis arborescens Oliver n. sp.

A small tree, 3 to 6 m. in height, with a stout trunk up to 30 cm. in diameter. Bark thick, grey, longitudinally ridged. A dense woolly tomentum covers the ends of the branchlets, young leaves on both sides, petioles and under surface of the adult leaves, and branches of the panicle; it is white or whitish, but is tinged with brown on young leaves, petioles and nerves of adult leaves. Leaves broadly obovate, widest above the middle, from there curving to a nearly right angled apex, and narrowing towards the base, which in the smaller leaves is truncate and in the larger ones cordate; rather thin, glossy, margin sinuate, the upper half with projecting lobes which, in the largest leaves, are more developed. Nerves prominent on both surfaces. Average upper leaf, 130 long, 80 diam., petiole, 30 mm.; largest shade leaf, 220 mm. long, 165 wide, petiole 75. Panicle single on each branchlet, in the axil of a subterminal leaf, shorter than the leaves, about 120 mm. long and the same in diameter; flowers numerous, 5 mm. long, the involucral bracts elliptic, blunt, margin ciliate at the tip, membranous, the central band brown (dried specimen) the marginal bands whitish. Achene ribbed. Pappus a single row of long, white, weak hairs with short branches, inserted on the expanded top of the achene. Florets about 12, of which more than half are male.

Plectomirtha baylisiana, Great Island, 8th May, 1946, growing in boulder scree. Height of tree 13-14 feet.

Photo, E. G. Turbott.

Plectomirtha baylisiana, Great Island, 8th May, 1946.

Photo, E. G. Turbott.

Type specimen in Auckland Museum, collected by G. T. S. Baylis on Great Island, Three Kings Islands, December 1st, 1945.

Arbor, 3-6 m. alta, trunco robusto. Cortex crassus, corrugatus. Ramuli, folia juveniles, petioli, folia adulta infra, inflorescentia, dense tomentosi. Folia obovata, ad basem truncata vel cordata, margine sinuata, paulum lobata, nitida. Panicula axillaris, foliis brevior, floribis numerous. Involucri bracteae ellipticae, obtusae, margine ciliatae. Achenium costatum. Pappus longus, albus.

A *B. repanda* differt trunco arborescente, foliis paulum lobatis, cordatis, panicula breve.

The following information is supplied by Dr. G. T. S. Baylis: "A small tree, 10 to 20ft. in height. Trunk stout, may exceed 1 foot in diameter at the base. Primary branches few, ascending, commonly arising at a low level. In old trees the trunk is often hollow. Bark very thick, grey, in corky ridges $\frac{1}{2}$ to 1 inch wide, $\frac{1}{4}$ to $\frac{1}{2}$in. deep. Crown dense, rather flat. Leaves fairly dark green above and very glossy. Lamina curling backwards in strong light."

This species is distinguished from *B. repanda* and from the doubtful species *B. rangiora* by the following characters: arborescent habit with stout trunk; rough bark; leaves with less prominent lobes and narrowing lower half with cordate base; panicle shorter than the leaves; involucral bracts longer.

Great Island. "There are two groves each containing about a dozen of these trees mixed with *kanuka*. Both are on steep greywacke screes facing the sea, one about 350ft. above sea level below and to the south of the depot above South-east Bay, the other 700ft. above sea level on the seaward slopes south of Crater Head; also a few isolated trees near these groves" (Baylis). Baylis, 1945 (AM). Turbott, 1946 (AM).

Senecio lautus Forst. f.

Great Island. Cheeseman, 1887—near shore, north landing. Fraser, 1928—on the cliffs at Tasman Falls. Baylis, 1945 (AM). South West Island. Cheeseman, 1889—Edges of cliffs on either side of gannet colony. North East Island. Buddle, 1947.

Sonchus oleraceus L.

Great Island. Cheeseman, 1887. Turbott and Meachen, 1946 (AM). Baylis, 1947.

INTRODUCED SPECIES.

Polypogon monspeliensis Desv. Great Island. Baylis, 1948.

Vulpia dertonensis (All.) Volk. Great Island. Baylis, 1945 (AM).

Bromus mollis L. Great Island. Baylis, 1945 (AM).

Aira caryophyllaea L. Great Island. Oliver, 1934 (DM). Baylis, 1945 (AM).

Aira praecox L. Great Island. Baylis, 1945 (AM). Turbott, 1946 (AM).

Cerastium caespitosum Gilib. Great Island. Baylis, 1945 (AM).

Gnaphalium purpureum L. Great Island. Baylis, 1948.

Cirsium lanceolatum (L.) Hill. Great Island. Baylis, 1945 (AM). Turbott and Meachen, 1946 (AM).

Hypochaeris radicata L. Great Island. Oliver and Baylis, 1934 (AM, DM). Baylis, 1947.

Taraxicum officinale Weber. Great Island. Baylis, 1945 (AM). Turbott, 1946 (AM).

Besides the above named species there are three which I have included in the indigenous list but which possibly have been introduced to New Zealand and consequently should be regarded as introduced to the Three Kings Islands, namely: *Solanium nigrum, Cotula australis* and *Sonchus oleraceus.*

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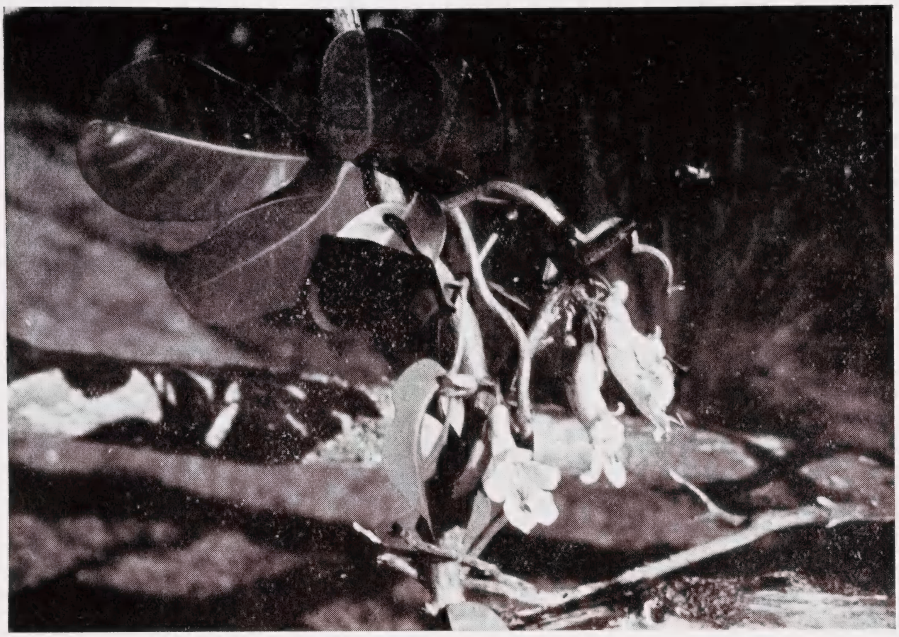

Tecomanthe speciosa, Great Island, 12th May, 1946.
Photo, E. G. Turbott.

Suttonia dentata, Great Island. Specimen in Auckland Museum, collected by G. T. S. Baylis, 1st December, 1945.
Photo, B. W. Hall.